APPENDIX 1

PAST AND PRESENT NEW HAMPSHIRE MERCURY REDUCTION EFFORTS

To minimize potential health risks posed by mercury, the New Hampshire Department of Environmental Services has already taken actions and adopted legislation, rules and policies to reduce mercury releases to the environment. These include:

- **RSA 149-M:28 Restrictions on Battery Sales and Disposal** restricts the sale of certain mercury-containing batteries, prohibits the disposal of mercuric oxide batteries and sets certain requirements on products containing mercury-containing batteries;

- **RSA 149-M:32-40 Toxics Reduction in Consumer Packaging** prohibits the sale of any package which intentionally contains lead, cadmium, **mercury** or hexavalent chromium;

- **Env-Ws 316 NH Water Quality Rules** establish a 2 ug/l mercury limit for drinking water supplies;

- **Env-Ws 410 NH Groundwater Protection Rules** establish a 2 ug/l mercury limit for groundwater supplies;

- **Env-Ws 430 NH Surface Water Rules** establish a 0.14 ug/l mercury limit for surface waters;

- **Env-Wm 403 NH Hazardous Waste Rules** establish 0.2 mg/l mercury leachability limit in waste for a hazardous waste determination;

- **Env-A 1400, NH Air Toxics Rules** establish a 24 hour and an annual Ambient Air Limit for mercury emissions of 0.300 ug/m^3. These limits became effective for new and modified sources on May 8, 1998. Existing sources will have up to 3 years from the effective date to achieve compliance with the new standards. Fossil fuel burning plants and devises are exempted from this rule.

- **Fluorescent Lamp Recycling Policy (interim)** exempts mercury-containing lamps from NH Hazardous Waste Rules requirements if lamps are unbroken and destined for recycling; and

- **Minimum Standards for Mercury-Containing Lamp Recycling Operations** would currently be incorporated into a facility's permit conditions. The Department is working on drafting rules which would place these standards in the hazardous waste regulations.

- **NH Lamp Management Contract** provides for the collection and management of mercury-containing lamps and ballasts from all state agencies. The contract requires recycling to the greatest extent possible. Municipalities and institutions are also eligible to use the contract.

Additional initiatives currently in progress which are relevant to mercury pollution prevention and control include:

- **NH Universal Waste Rule (UWR)**, expected to be adopted by DES in 1999, will likely include mercury-containing devices such as thermostats and switches as well as mercury-containing lamps. The UWR promotes the environmentally sound recycling of these wastes by streamlining and reducing their regulatory requirements for collection, consolidation and transportation.

- **Env-Ws 800 NH Septage and Sludge Disposal Rules,** currently in the process of being adopted will establish a mercury limit of 10 mg/kg for land application uses, once adopted, and lower the limit to a more stringent, technology-based limit, effective January, 2001.

- **Env-A 3300 Municipal Waste Combustor Rules** require large facilities (capable of burning greater than 250 tons per day of municipal solid waste) to comply with the federal emissions guideline of limiting mercury emissions to 80 micrograms per dry standard cubic meter or to demonstrate a removal efficiency of 85%.

- **Governor's Building Energy Conservation Initiative:** the Department of Environmental Services, Governor's Office of Energy and Community Services and Department of Administrative Services are cooperatively working on a project to make state buildings more energy efficient, thereby reducing energy demands and mercury emissions.

- **Regional Assessment of Atmospheric Deposition of Mercury** - The Department of Environmental Services, in cooperation with the U.S. Environmental Protection Agency, has recently installed, and is maintaining, a mercury deposition monitoring station as part of the New England Mercury Deposition Network. The station is located at our existing ozone monitoring site at the Laconia Airport was operational as of September 1997. Deposition monitoring is a critical link in assessing and modeling the relationships between the source, transport, deposition, and fate of mercury emissions.

- **Hospital/Medical/Infectious Waste Incinerator (HMIWI) Rule**, scheduled for adoption in November 1998, will establish a mercury emission limit of 0.055 mg/dscm. All sources must achieve compliance by June 2000.

APPENDIX 2

MAJOR MERCURY EMISSIONS SOURCES IN NEW HAMPSHIRE*

Town	Facility	Tons Burned Per Year	Hg Emissions (estimated lbs/year)	Percent Total Emissions
Large Municipal Waste Combustors				
Claremont	Wheelabrator Claremont Co., L.P.[1]	70,384.0	154.9	
Concord	Wheelabrator Concord Co., L.P.[1]	182,560.0	401.6	
	TOTALS	***252,944.0***	***556.5***	***35%***
Small Solid Waste Incinerators[2]				
Auburn	Town of Auburn Incinerator	1,024.0	5.7	
Bridgewater	Hebron-Bridgewater SWD	985.0	5.5	
Candia	Town of Candia Incinerator	1,200.0	6.7	
Lincoln	Lincoln/Woodstock SWD	2,684.0	15.0	
Litchfield	Town of Litchfield Incinerator	720.0	4.0	
Nottingham	Town of Nottingham Incinerator	321.0	1.8	
Ossipee	Town of Ossipee Incinerator	1,946.0	10.9	
Pelham	Town of Pelham Incinerators	1,664.0	9.3	
Sutton	Town of Sutton Incinerator	602.0	3.4	
Wilton	Town of Wilton Incinerator	578.0	3.2	
	TOTALS	***11,724.0***	***65.5***	***4%***
Medical Waste Incinerators [3]				
Berlin	Androscoggin Valley Hospital	15.7	1.2	
Concord	Concord Hospital	475.0	35.2	
Derry	HCA Parkland Medical Center	100.0	7.4	
Exeter	Exeter Hospital	70.2	5.2	
Hanover	Dartmouth Medical School	7.8	0.6	
Keene	The Cheshire Medical Center	62.7	4.6	
Laconia	Lakes Region General Hospital	13.5	1.0	
Lancaster	Weeks Memorial Hospital	16.3	1.2	
Littleton	Littleton Regional Hospital	27.8	2.1	
Manchester	Catholic Medical Center	195.0	14.4	
	Elliot Hospital	534.3	39.5	
	Veterans Affairs Medical Center	26.0	1.9	
Portsmouth	HCA Portsmouth Regional Hospital	321.6	23.8	
	TOTALS	***1,865.9***	***138.1***	***9%***
Sewage Sludge Incinerators[4]				
Manchester		4,476.0	14.3	
	TOTALS	***4,476.0***	***14.3***	***1%***
Coal Fired Power Plants[5]				
Bow	Merrimack Station	1,235,159.0	259.4	
Portsmouth	Schiller Station**	325,626.0	68.4	
	TOTALS	***1,560,785.0***	***327.8***	***21%***
Fuel Oil				
#2 Fuel Oil[6]	Residential Use	241,128,750 (gallons)	231.5	
#2 Fuel Oil[6]	Commercial/Industrial Use	80,376,250 (gallons)	77.2	
#6 Fuel Oil[7]	Commercial/Industrial Use	158,046,000 (gallons)	173.9	
	TOTALS	***479,551,000 (gallons)***	***482.6***	***30%***
TOTAL EMISSIONS FROM MAJOR MERCURY SOURCES			***1584.8***	***100%***

* *Based on 1997 Inventory*

** *Based on 1996 Inventory. 1997 inventory of 418,285 tons of coal burned was abnormally high due to nuclear power plant outages.*

APPENDIX 2 (continued)

MAJOR MERCURY EMISSION SOURCES IN NEW HAMPSHIRE - NOTES

1. Calculated using an emission factor of 2.2×10^{-3} lb/ton of waste burned (with controls), taken from EPA AP-42 Emission Factors, October 1996.

2. Calculated using an emission factor of 5.6×10^{-3} lb/ton of waste burned (uncontrolled), taken from EPA's Locating and Estimating Mercury Emissions From Sources of Mercury and Mercury Compounds, September 1993.

3. Calculated using an emission factor of 74×10^{-3} lb/ton of mixed waste burned , taken from EPA's Hospital/Medical/ Infectious Waste Incineration Guidelines, November 1997.

4. Calculated using and emission factor of 3.2×10^{-3} lbs/ton for sewage sludge incineration with a Venturi Scrubber, taken from EPA's Locating and Estimating Mercury Emissions From Sources of Mercury and Mercury Compounds, September 1993. This factor is the high end of the scale and may overstate the emissions from this source.

5. Calculated using an emission factor of 0.21×10^{-3} lbs/ton for the burning of bituminous coal in a facility with an electrostatic precipitator, taken from EPA's Locating and Estimating Mercury Emissions From Sources of Mercury and Mercury Compounds, September 1993 .

6. Calculated using an emission factor of 0.96 lb/10^6 gallons of #2 fuel oil burned, taken from EPA's Locating and Estimating Mercury Emissions From Sources of Mercury and Mercury Compounds, September 1993.

7. Calculated using an emission factor of 1.1 lb/10^6 gallons of #6 fuel oil burned, taken from EPA's Locating and Estimating Mercury Emissions From Sources of Mercury and Mercury Compounds, September 1993.

APPENDIX 3

ANTHROPOGENIC EMISSION SOURCES OF MERCURY

EPA's ***Mercury Study Report to Congress*** (December 1997) estimated national mercury emissions sources and ranked them by their relative contribution. National emissions estimates, along with New Hampshire estimates, are presented below.

Emission Source	EPA Estimated Annual Emissions (Nationwide) 1994-1995	NH Estimated Annual Emissions 1997[1]
Medical Waste Incinerators	10.1%	9% (13 sources)
Municipal Waste Combustors	18.7%	39% (12 sources)
Utility Boilers	32.8	24%
Industrial Manufacturing[2]	10.0%	N/A
Industrial, Commercial, and Residential Boilers (all fuels)[3]	20.2%	26%
Sewage Sludge Incinerators	0.6%	1%
Hazardous Waste Combustors	4.4%	N/A
Other[4]	3.2%	1%
TOTALS	**100%**	**100%**

Notes:

(1) New Hampshire figures are estimates based on the use of modeling, actual emissions may vary depending upon activity levels and type of combustion material. See **Appendix 1** for additional emissions information and information related to estimating emissions.

(2) Estimates of industrial sources in New Hampshire are unavailable at this time, but are expected to be minimal since the major types of mercury emitting industries are not found in NH.

(3) Residential boiler emissions (including wood stoves) are variable depending upon usage and mercury content of the fuel(s).

(4) Other sources of mercury include mercury-containing lamp breakage and medical and dental emissions. Although specific estimates are not available, these sources are believed to comprise a trace to less than 1% of total mercury emissions. There are many uncertainties surrounding the quantification of these sources.

Sources: EPA, Mercury Study Report to Congress, December, 1997.
NHDES Air Emissions Inventory Data, 1997.

APPENDIX 4

PRELIMINARY IMPACT ESTIMATE OF ADOPTING NEG/ECP RECOMMENDED MERCURY EMISSION LIMIT FOR MUNICIPAL WASTE COMBUSTORS

PROPOSED ACTION

DES proposes to adopt a 0.028 mg/dscm (milligrams per dry standard cubic meter) mercury emission limit for the two largest Municipal Waste Combustors in New Hampshire (the Concord and Claremont Wheelabrator facilities). This would require the installation of additional air pollution control technology.

EXPECTED MERCURY REDUCTIONS

If New Hampshire applied the 0.028 mg/dscm limit to both the Concord and Claremont Wheelabrator facilities, Statewide mercury emissions would be reduced by approximately 33%.

FISCAL IMPACTS

A carbon injection system would need to be installed at each facility to meet the 0.028 mg/dscm limit. EPA estimates the cost of these controls to be in the $500,000 $1,000,000 range. DES estimates that the total cost will be close to $1,000,000 per facility.

To better estimate potential cost impacts on affiliated municipalities, in order to ensure that its assessment is appropriately conservative, DES conducted a preliminary analysis assuming a cost of $1,000,000 for controls at each of the two facilities. DES further assumed that these costs would be apportioned to the towns according to the amount of waste that they send to the facility. DES evaluated costs according to one, five, ten and fifteen year pay-backs on a town-by-town basis. Spreadsheets which provide detailed costs for each alternative are available through the DES.

FINANCIAL ASSISTANCE OPTION

Currently DES provides 20% to 30% grants and State Revolving Fund low interest loans to towns and cities for water, sewer and landfill closure projects. State financial assistance is not currently available to cities and towns for emission controls. If the State chose to provide financial assistance to New Hampshire towns and cities to cover 100% of their portion of the cost of the proposed mercury emission controls, it could either appropriate funds for a one-time payment or establish a grant program to reimburse the towns for their costs over the life of a bond.

If the State elected to make a one-time payment, it would need to appropriate up to $700,000 for controls at the Concord facility and up to $490,000 for the Claremont facility, for a total one-time appropriation up to $1,200,000. Alternatively, the State could bond the cost of purchasing the control equipment.

APPENDIX 5

ESTIMATED COSTS FOR ESTABLISHING A MUNICIPAL LAMP RECYCLING PROGRAM

Below are the estimated costs for setting up a municipal lamp collection and recycling program. As proposed, the program would be similar to the DES program for collecting used oil, and could significantly enhance the recycling rate of household fluorescent lamps. The cost to a community (with an existing transfer station) to set up a program should be under $100, and storage will cost little, provided the municipality uses an existing building to store the bulbs. Recycling costs vary depending on the number of lamps actually recycled by the community.

(1) Fiber Lamp Drum	$ 15.95
(1) 5 Gallon Pail with Lid	$ 15.95
Cleaning Equipment	$ 20.00
Personnel Protective Clothing	$ 25.00
Total	**$ 76.90**

Recycling costs (for full drum) = $ 30.60 (1 drum holds 85 four foot lamps)
Minimum pick-up fee = $ 100.00

Notes:

(1) This estimate is based on a municipality participating in the State lamp recycling contract with Global Recycling Technologies, Inc., (GRT) of Stoughton, MA, 1-800-478-6055. All NH municipalities are eligible to participate in the contract. The current contract period is June 16, 1997 through June 30, 2000. Pickup days and times and or container purchase can be arranged directly between GRT and the municipality. All users must provide a central pick up area, GRT will provide all shipping labels and shipping documents at the time of pick up.

(2) It is uncertain how long it would take a town to collect 85 lamps, so recycling costs could vary greatly. In addition, under the current state contract with Global Recycling there is a $100 minimum charge per pick-up, which could be cost prohibitive for some communities.

(3) Capital costs would increase substantially if the town were to construct a building to protect lamps from the elements. Some commercial collectors use tractor-trailers as collection, storage and transportation facilities. There would also be an additional cost if staff had to be hired to oversee collection and handling of lamps.

(4) Cost estimates are based on discussions between DES Waste Management staff and lamp recycling facility personnel and suppliers.

Source: NHDES, Waste Management Division, 1997

APPENDIX 6

LIST OF REFERENCES

1. *Mercury Study Report to Congress,* U.S. Environmental Protection Agency, December, 1997.

2. *Draft Executive Summary of the Mercury Study Report to Congress*, U.S. Environmental Protection Agency, June, 1996.

3. *Northeast States and Eastern Canadian Provinces Mercury Study, A Framework for Action,* NESCAUM, NEWMOA, NEIWPCC and Canadian Ecological Monitoring Network, February, 1998.

4. *Regional Mercury Action Plan,* Conference of New England Governors and Eastern Canadian Premiers, June 1998.

5. A*ir Emissions Inventory Data,* New Hampshire Department of Environmental Services, 1993, 1994 and 1995.

6. *Economic Impact Analysis for Proposed Emissions Standards and Guidelines for Municipal Waste Combustors,* U.S. Environmental Protection Agency, March 1994.

7. *Management of Used Fluorescent Lamps: Preliminary Risk Assessment,* Research Triangle Institute, October 1992 (revised May 14, 1993).

8. *Environmental Risk Analysis: Spent Mercury-Containing Lamps*, National Electrical Manufacturers Association (NEMA), March 1996.

9. *Shedding Light on Fluorescent Waste*, Paul Walitsky, C.H.M.M, ECON Magazine, January 1996.

10. *Mercury Emissions From the Disposal of Fluorescent Lamps,* U.S. Environmental Protection Agency, Office of Solid Waste, June, 1997.

11. *Annual Pretreatment Reports,* New Hampshire Department of Environmental Services, Industrial Pretreatment Program, 1996.

12. *Dental Waste Management Fact Sheet*, North Carolina Office of Waste Reduction, March, 1996.

13. *Database on Mercury in Fish,* NH Department of Environmental Services.

14. *Mercury Data on the Common Loon*, NH Loon Preservation Committee, a self-funded project of the Audubon Society of New Hampshire, 1997.

15. *Breath Taking, Premature Mortality Due to Particulate Air Pollution in 239 American Cities,* Natural Resources Defense Council, 1996

16. *Memorandum of Understanding Between the Environmental Protection Agency and the American Hospital Association,* June, 1998.

17. *Methyl Mercury Contamination and Emissions to the Atmosphere from Soil Amended with Municipal Sewage Sludge*, Anthony Carpi, Steven E. Linberg, Eric M. Prestbo, and Nicolas S. Bloom, *Journal of Environmental Quality*, 1997.

18. *Geographic Trend in Mercury Measured in Common Loon Feathers and Blood*, Evers et. al., *Environmental Toxicology and Chemistry, Volume 17*, 1998.

19. *Summary of Loon Preservation Committee Research and Management Activities for the 1997 field season*, unpublished, 1998.

APPENDIX 7

LIST OF ACRONYMS

AAL	Ambient air limit
AHA	American Hospital Association
ASNH	Audubon Society of New Hampshire
BHRA	Bureau of Health Risk Assessment
BIA	Business and Industry Association of New Hampshire
COD	Chemical Oxygen Demand
CFR	Code of Federal Register
DES	Department of Environmental Services
DHHS	Department of Health and Human Services
EPA	US Environmental Protection Agency
F&G	NH Fish & Game Department
IWMS	Integrated waste management strategy
MOU	Memorandum of Understanding
MG/DSCM	Milligrams per dry standard cubic meter
MG/KG	Milligrams per kilogram
MSW	Municipal solid waste
MWC	Municipal waste combustors
HMIWI	Hospital/Medical/Infectious Waste Incinerators
NPDES	National Pollutant Discharge Elimination System
NEG/ECP	New England Governors and Eastern Canadian Premiers
NEIWPCC	New England Interstate Water Pollution Control Commission
NESCAUM	Northeast States for Coordinated Air Use Management
NEWMOA	Northeast Waste Management Officials Association
NHHA	New Hampshire Hospital Association
NHPUC	New Hampshire Public Utility Commission
NRDC	Natural Resources Defense Council
PPM	Parts Per Million
PPT	Parts Per Trillion
PSNH	Public Service Company of New Hampshire
TCLP	Toxicity Characteristic Leaching Procedure
USFDA	United States Food and Drug Administration
UW Rule	Universal Waste Rule (a.k.a. UWR)

APPENDIX 8

NEW HAMPSHIRE MERCURY REDUCTION STRATEGY
SUMMARY MATRIX OF RECOMMENDATIONS

RECOMMENDED ACTIONS	DATE
MUNICIPAL WASTE COMBUSTORS (39% of NH mercury emissions)	
R-1. Reduce mercury emissions from Municipal Waste Combustors (MWCs) by:	
(a) Drafting legislation to require a mercury emission limit of 0.028 mg/dscm or lower for the State's two largest MWCs by January 1, 2002; and	**1/1/02**
(b) Evaluating, by September 30, 1999, the overall technical and economic feasibility of closing small MWCs over time or requiring small MWC's to meet a limit of 0.028 mg/dscm or lower.	**9/30/99**
R-2. Investigate and draft legislation, if appropriate, by November 1, 1999, to provide financial assistance to New Hampshire municipalities in implementing mercury reduction controls and programs.	**11/1/99**
R-3. Require annual emissions monitoring and stack testing in order to more accurately monitor actual mercury emissions from the State's two largest MWCs beginning in 1998.	**12/31/98**
R-4. Establish an external stakeholder workgroup (MWC Workgroup) by October 31, 1998 to, among other tasks, evaluate the need for periodic emissions testing at smaller MWCs. The workgroup should consist of representatives from DES, New Hampshire Department of Health and Human Services (DHHS), Business and Industry Association of New Hampshire (BIA), industry, municipalities, environmental groups and other interested parties.	**10/31/98**
R-5. Encourage reductions in the amount of mercury-containing products entering the municipal waste stream through an Integrated Waste Management Strategy developed by the MWC Workgroup by:	
(a) Continuing to work with the MWC operators, through the solid waste operator training program, to identify and remove mercury-containing wastes prior to incineration and ensure that those products are safely recycled (ongoing);	**ongoing**
(b) Working with construction/demolition, recycling and other contractors and the MWC Workgroup to remove mercury-containing products such as thermostats and fluorescent tubes from construction and demolition debris and promote their safe recycling, by June 30, 1999; and	**6/30/99**
(c) Drafting legislation by November 1, 1999 (with an effective date of July 1, 2003) to prohibit the disposal of mercury-containing products and equipment in municipal waste combustors and medical waste incinerators. This legislation will serve as a backstop to ensure pollution prevention objectives are achieved.	**11/1/99**

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NEW HAMPSHIRE MERCURY REDUCTION STRATEGY
SUMMARY MATRIX OF RECOMMENDATIONS

RECOMMENDED ACTIONS	DATE
HOUSEHOLD/MUNICIPAL SOLID WASTE	
R-6. Continue efforts with municipalities and others to remove mercury-containing batteries from the waste stream and ensure safe recycling consistent with the Integrated Waste Management Strategy detailed in R-5 (ongoing).	**ongoing**
R-7. By December 31, 2000, consistent with the Integrated Waste Management Strategy, encourage lamp manufacturers and vendors to reduce the mercury which enters the environment from their products by: **(a) Providing recognition for products with lower mercury content;** **(b) Helping them establish "take back" programs to ensure safe recycling; and** **(c) Providing information to consumers, through product labeling and other means, regarding mercury hazards and safe recycling of mercury-containing lamps.**	**12/31/00**
R-8. Consistent with the Integrated Waste Management Strategy, encourage municipalities to implement lamp collection and recycling programs (similar to current municipal used oil collection programs or household hazardous waste collection days) by December 31, 2000 by: **(a) Providing technical assistance to municipalities in establishing such programs; and** **(b) Providing financial assistance (e.g., through loans, grants or from product surcharges) to municipalities to assist in establishing such programs.**	**12/31/00**
R-9. Beginning June 30, 1999, initiate a public outreach campaign, including mercury-oriented public service announcements to encourage greater citizen awareness of mercury hazards, alternatives to mercury-containing products and the need to safely recycle mercury-containing wastes.	**6/30/99**
R-10. Beginning June 30, 1999, conduct specific outreach to schools, institutions and government agencies on methods to eliminate the non-essential use of mercury (e.g. in labs) and safely manage and recycle mercury-containing wastes.	**6/30/99**
R-11. By December 31, 1999, draft rules for the permitting of recycling facilities in order to ensure mercury recycling is conducted in an environmentally sound manner.	**12/31/99**
R-12. Draft legislation to prohibit the non-essential use of mercury in consumer and commercial products for introduction in the 2000 New Hampshire Legislative Session.	**1/1/00**
R-13. By June 30, 1999, conduct outreach in conjunction with the BIA and DHHS to educate businesses about the health hazards of mercury, encourage compliance with hazardous waste regulations and increase recycling and safe management of mercury-containing wastes.	**6/30/99**

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NEW HAMPSHIRE MERCURY REDUCTION STRATEGY
SUMMARY MATRIX OF RECOMMENDATIONS

RECOMMENDED ACTIONS	DATE
HOSPITAL/MEDICAL/INFECTIOUS WASTE INCINERATORS (9% of NH mercury emissions)	
R-14. Reduce mercury emissions from HMIWIs by:	
(a) Requiring facilities to meet a mercury emission limit of 0.055 mg/dscm by January 1, 2002; and	**1/1/02**
(b) Establishing an external stakeholder HMIWI Workgroup by October 31, 1998 to, among other tasks, evaluate the technical and economic feasibility of reducing the HMIWI mercury emission limit to 0.028 mg/dscm or lower. This workgroup should consist of representatives from DES, DHHS, New Hampshire Hospital Association, industry, environmental groups and other interested parties.	**10/31/98**
R-15. Develop emissions testing requirements for HMIWIs by:	
(a) Conducting initial DES emissions stack tests on representative sources by December 31, 1998; and	**12/31/98**
(b) Developing appropriate emissions testing requirements based on the findings of the initial DES emissions tests by June 30, 1999.	**6/30/99**
R-16. Establish a workgroup on Pollution Prevention in the Healthcare Industry (Healthcare Workgroup) by October 31, 1998 in order to facilitate the goal of virtual elimination of mercury-containing waste from the medical waste stream. The workgroup should consist of representatives from DES, DHHS, New Hampshire Hospital Association, industry, environmental groups and other interested parties.	**10/31/98**
The workgroup will conduct outreach to health care providers and laboratories to encourage the use of alternative products and procedures, such as digital thermometers, manometers, and micro scale chemistry methods, by January 1, 1999.	**1/1/99**
R-17. Require all generators of mercury-containing medical waste to introduce mercury source reduction and source separation programs by January 1, 2000.	**1/1/00**
R-18. Draft legislation, by November 1, 1999 (with an effective date of July 1, 2003), to prohibit the disposal of all mercury-containing products and equipment in medical waste incinerators (see R-5(c)). This legislation will serve as a backstop to ensure pollution prevention objectives are achieved.	**1/1/99**

APPENDIX 8

NEW HAMPSHIRE MERCURY REDUCTION STRATEGY
SUMMARY MATRIX OF RECOMMENDATIONS

RECOMMENDED ACTIONS	DATE
UTILITY AND NON-UTILITY BOILERS (50% of NH mercury emissions)	
R-19. Encourage greater implementation of energy efficiency and conservation programs for residential, commercial, and industrial customers by:	
(a) Participating actively in New Hampshire Public Utility Commission (NHPUC) proceedings relating to energy efficiency (ongoing);	**ongoing**
(b) Encouraging the initiation of and active participation in proceedings at the NHPUC (and in regional efforts) relating to disclosure of the environmental characteristics of power sales (ongoing);	
(c) Assisting New Hampshire's Interagency Energy Efficiency Committee in energy saving efforts such as expeditiously adopting Energy Star Building Programs for State buildings (1998-2003); and	**ongoing**
(d) Assisting the Governor's Office of Energy and Community Services in outreach to electricity consumers about reducing mercury emissions through greater energy efficiency (ongoing).	**ongoing**
R-20. Reduce mercury emissions from utility and non-utility boilers by:	
(a) Encouraging expeditious development of lower-mercury generation sources such as natural gas, solar photo-voltaics and fuel cells rough permitting processes and in the allocation of emission allowances (ongoing).	**ongoing**
(b) Establishing an external stakeholders workgroup (Electric Workgroup) by October 31, 1998, which should consist of representatives from DES, DHHS, utility industry, environmental groups and other interested parties, to assess the technical and economic feasibility of:	**10/31/98**
1. Requiring a 75% reduction in mercury emissions from coal-fired power plants by the year 2005;	**12/31/05**
2. Repowering coal-fired power plants in New Hampshire to natural gas (study to be completed by September 30, 1999); and	**9/30/99**
3. Switching from #6 fuel oil to #2 fuel oil or natural gas (study to be completed by September 30, 1999).	**9/30/99**
WASTEWATER AND SLUDGE	
R-21 Adopt stringent rules for mercury in wastewater sludge, setting a limit of 10 mg/kg upon adoption in 1998 and reducing that limit to a more stringent, technology-based limit by 2001.	**12/31/01**
R-22 Evaluate the technical and economic feasibility of adopting stringent rules for mercury in wastewater discharges, setting a health-based limit of 1.8 parts per trillion. Study to be completed by June 30, 2000.	**6/30/00**
R-23 Conduct outreach, through the DES Industrial Pretreatment and Pollution Prevention Programs, to eliminate or minimize the non-essential use of mercury in industrial, commercial, governmental, educational and residential facilities, by September 30, 1999.	**9/30/99**
R-24 Develop a water quality sampling program to determine background levels of mercury in surface waters of the state and existing effluent levels at industrial facilities and wastewater treatment plants (upon adoption of EPA Method 1631).	
R-25 Require an emissions stack test at the Manchester sludge incinerator by June 30, 1999, in order to establish its current mercury emission rate and to develop future period emissions testing requirements.	**6/30/99**
R-26 By June 30, 1999, evaluate the feasibility of adopting a 0.01 mg/dscm or lower mercury emission limit for the Manchester sludge incinerator.	**6/30/99**

APPENDIX 8

NEW HAMPSHIRE MERCURY REDUCTION STRATEGY
SUMMARY MATRIX OF RECOMMENDATIONS

RECOMMENDED ACTIONS	DATE
DENTAL AMALGAM	
R-27 By June 30, 1999, conduct outreach to the general public and dentists' offices in conjunction with the New Hampshire Dental Society to encourage the voluntary use of alternatives to mercury-containing amalgam; and encourage the proper collection and disposal of waste amalgam.	**6/30/99**
R-28 Draft legislation, by November 1, 1999 (with an effective date of July 1, 2003) to prohibit the use of mercury-containing amalgam. This legislation will be used as a backstop to ensure that pollution prevention objectives are achieved.	**11/1/99**
MERCURY TASK FORCE	
R-29 By October 31, 1998, establish a multi-stakeholder *New Hampshire Mercury Task Force*. The Task Force should consist of representatives from the New Hampshire Legislature, DES, DHHS, BIA, affected industries and municipalities, the New Hampshire Fish and Game Department (F&G), academia, environmental groups and other interested parties. This Task Force will meet at least annually to review progress on the implementation of the Mercury Reduction Strategy and update it as necessary.	**10/31/98**

APPENDIX 8

NEW HAMPSHIRE MERCURY REDUCTION STRATEGY
SUMMARY MATRIX OF RECOMMENDATIONS

RECOMMENDED ACTIONS	DATE
PUBLIC OUTREACH AND EDUCATION	
R-30 Beginning in January, 1999, conduct outreach and education activities, in conjunction with other interested agencies and organizations, on mercury hazards, alternatives to mercury containing products and methods to reduce the release of mercury to the environment.	**1/1/99**
R-31 Conduct education and outreach activities, in conjunction with the DHHS and the F&G, to increase public awareness of the statewide freshwater fish consumption advisory. In particular, conduct outreach to those segments of the population that are most sensitive (e.g., pregnant women, young children) to the health effects of mercury and that consume greater quantities of freshwater fish (e.g. subsistence fishers), by September 30, 1999.	**9/30/99**
R-32 Conduct outreach, including the distribution of existing facts sheets, to users of mercury (e.g. schools, laboratories, government agencies) on the proper handling and clean-up of mercury spills, beginning in January, 1999.	**1/1/99**
R-33 Conduct training, through the solid waste operator training program, on the identification and removal of mercury-containing wastes prior to incineration and ensure that those products are safely recycled (ongoing).	**ongoing**
R-34 Actively participate in regional public education and outreach efforts on mercury hazards and alternatives to the use of mercury-containing products (ongoing).	**ongoing**
RESEARCH AND MONITORING	
R-35 Continue support for in-state mercury sampling and monitoring programs in order to evaluate trends in mercury deposition and impacts. This information will be used to update the strategy as necessary (ongoing).	**ongoing**
R-36 Actively participate in the NEG/ECP Regional Mercury Task Force efforts to support and expand research and analysis to improve the understanding of mercury sources, impacts and cycling in the environment (ongoing).	**ongoing**

APPENDIX 8

NEW HAMPSHIRE MERCURY REDUCTION STRATEGY
SUMMARY MATRIX OF RECOMMENDATIONS

RECOMMENDED ACTIONS	DATE
RELATED FEDERAL INITIATIVES	
R-37 Continue efforts to monitor, comment on and influence federal legislation, regulatory and policy initiatives with respect to mercury research, use, management, treatment and disposal (ongoing).	**ongoing**
R-38 Continue active participation in establishing long term monitoring protocols for the M/V Empire Knight exclusion site and to improve understanding of the patterns of contamination around the ship; and, whether or not mercury is becoming more available to the biota (ongoing).	**ongoing**
R-39 Encourage the Coast Guard to consider the implications of mass movement of bottom sediments in the region of the exclusion zone possibly induced by microseisims or larger scale seismic events whereby the sediment mass including the mercury could be transported over a considerable distance thereby exacerbating the problem, by December 31, 1998.	**12/31/98**
R-40 Encourage the Coast Guard to keep the states advised with respect to technical advances which could render recovery of the remaining mercury technically and economically feasible, by December 31, 1998.	**12/31/98**